REMARKS

Summary of the Office Action

In the Office Action, the drawings stand objected to.

Claim 1 stands rejected under 35 U.S.C. 112, 1st and 2nd Paragraphs.

Claim 1 stands rejected under 35 U.S.C. 103 (a), as being unpatentable over U.S. Patent Nos. 5,280,509 to *Py* and 3,607,630 to *West*.

Claim 1 stands rejected under 35 U.S.C. 103 (a), as being unpatentable over *Py* in view of *West*, and further in view of newly cited U.S. Patent No. 5,812,623 to *Holden*.

Summary of the Response to the Office Action

Applicant proposes amending claim 1 as shown above, and amending Fig. 1 as shown in the attachment filed herewith. Accordingly, claim 1 is pending for further consideration.

Objection to the Drawings

In the Office Action, the drawings stand objected to.

As required in the Office Action, Fig. 1 has been amended to disclose the open ends of the vertical pipes and a conventional dovetail joint which connects the horizontal and vertical pipes.

Accordingly, Applicant respectfully requests withdrawal of the objection to the drawings.

Rejection under 35 U.S.C. 112, 1st and 2nd Paragraphs

Claim 1 stands rejected under 35 U.S.C. 112, 1st and 2nd Paragraphs.

Applicant proposes amending claim 1 and the drawings, as shown above, to address the concerns raised in the Office Action. These amendments have been made solely for the purpose of correcting typographical errors and other informalities, and not for purposes related to patentability.

Accordingly, Applicant respectfully requests withdrawal of the 35 U.S.C. 112, 1st and 2nd Paragraph, rejection of claim 1.

All Claims are Allowable

In the Office Action, claim 1 stands rejected under 35 U.S.C. 103 (a), as being unpatentable over U.S. Patent Nos. 5,280,509 to *Py* and 3,607,630 to *West*. Claim 1 stands rejected under 35 U.S.C. 103 (a), as being unpatentable over *Py* in view of *West*, and further in view of newly cited U.S. Patent No. 5,812,623 to *Holden*. Applicant traverses this rejection for the following reasons.

With regard to independent claim 1, Applicant respectfully asserts that *Py*, W*est* and *Holden*, viewed either singly or in combination, do not teach or suggest an ex-vessel core melt retention device including, at least, "horizontal jacket pipes located on a shell boundary of a cavity floor of a reactor cavity, the horizontal jacket pipes having water inlets A formed at their lower half, the water inlets including a series of holes and allowing water to enter the bottom of the pipes ... vertical pipes connected at both ends of the horizontal jacket pipes in the form of a conventional dovetail joint to communicate with each other, the vertical pipes including open ends disposed within said reactor cavity to permit water vapor to escape therethrough and enable recirculation of said vapor within said reactor cavity ... a water supply part located at the lower half of the horizontal jacket pipes for allowing water to enter from the holes at the lower half of the horizontal jacket pipes," as recited in independent claim 1, as amended.

Support for these features recited in claim 1 can be found at least on page 4, line 19 to page 5, line 13 of the originally filed specification, and in Figs. 1 and 2 of the drawings. Specifically, referring to Figs. 1 and 2, the present invention discloses an ex-vessel core melt retention device including horizontal jacket pipes 110 located on a shell boundary of cavity floor 200 of a reactor cavity. Horizontal jacket pipes 110 include water inlets formed at their lower half. The water inlets include a series of holes 111 which allow water 114 to enter the bottom of pipes 110. As shown in Fig. 1, the retention device further includes vertical pipes 130 connected

at both ends of the horizontal jacket pipes 110 in the form of a conventional dovetail joint 112 for allowing pipes 110 and 130 to communicate with each other. Vertical pipes 130 include open ends 113 disposed within the reactor cavity to permit water vapor to escape therethrough and enable recirculation of the vapor within the reactor cavity. As shown in Fig. 2, a water supply part is located at the lower half of horizontal jacket pipes 110 for allowing water to enter from the holes at the lower half of the horizontal jacket pipes.

The Office Action cites *Py*, *West* and *Holden* as teaching or suggesting the invention recited in claim 1 of the present invention.

Specifically, as shown in Figs. 3-5 of *Py*, *Py* discloses a device 11 for cooling and protecting vessel 3. Device 11 includes channels 20 and collector assemblies 21 and 22 (designated horizontal jacket pipes in Office Action), which form a closed loop and facilitate the supply and removal of cooling and heated fluid to channels 20, (Col. 4:31-36). *Py* further discloses vertical pipes 12 and 13 for supplying and removing cooled and heated water, with the vertical pipes being disposed outside the cooling device as shown in Fig. 1, (Col. 4:1-7).

Contrary to the present invention as recited in independent claim 1 and as discussed above, *Py* discloses a closed loop system for cooling and protecting vessel 3. Accordingly, as acknowledged in the Office Action, *Py* does not teach or suggest, at least, "vertical pipes connected at both ends of the horizontal jacket pipes in the form of a conventional dovetail joint to communicate with each other, the vertical pipes including open ends disposed within said reactor cavity to permit water vapor to escape therethrough and enable recirculation of said vapor within said reactor cavity," as recited in independent claim 1, as amended.

In an attempt to overcome this deficiency in the teachings of *Py*, the Office Action cites *West* as teaching the use of open end vertical pipes and concludes that it would be obvious for one of ordinary skill to modify the invention of *Py* to provide the open end vertical pipes disclosed by *West* as such a modification would reduce system maintenance, for example.

Applicant respectfully asserts that as *Py* expressly teaches a closed loop system, modifying the invention of *Py* as suggested in the Office Action would render *Py's* cooling

device inoperable, and would moreover amount to the application of impermissible hindsight reasoning. Specifically, in order to establish a prima facie case of obviousness, three basic criteria must be met, as set forth in M.P.E.P. § 2142.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Applicant respectfully asserts that based upon the express teachings of *Py* in which a closed loop cooling system is disclosed, one of ordinary skill in the art would not modify *Py's* invention to provide open vertical pipes 12,13, as suggested in the Office Action, as doing so would provide inadequate cooling for the floor for the invention of *Py*. Since pipes 12,13 for *Py* are disposed outside containment unit 1 in the embodiment of Fig. 1, modifying the invention of *Py* to provide open end vertical pipes would eliminate the cooling provided by heat exchanger 14 for *Py*. Moreover, there is no suggestion or motivation whatsoever in the teachings of *Py* or *West* to place the open ends of the vertical pipes within the reactor cavity and enable recirculation of the vapor within the reactor cavity, as recited in independent claim 1 for the present invention. The use of vertical pipes having open ends disposed within the reactor cavity for the present invention is beneficial in that vapor escaping through the open ends and thereafter recirculating within the reactor cavity enables further cooling of the reactor cavity.

Second, there must be a reasonable expectation of success. Since neither *Py* nor *West* teach or suggest "vertical pipes connected at both ends of the horizontal jacket pipes in the form of a conventional dovetail joint to communicate with each other, the vertical pipes including open ends disposed within said reactor cavity to permit water vapor to escape therethrough and enable recirculation of said vapor within said reactor cavity," as recited in independent claim 1, as amended, one of ordinary skill in the art could not reasonably contemplate the invention as recited in independent claim 1, from the teachings of the applied references themselves. Moreover, as discussed above, one of ordinary skill in the art would be not modify the invention

of *Py* to open the ends of vertical pipes 12,13, as such a modification would render *Py's* cooling device inoperable.

Finally, the prior art reference, and not the Applicant's disclosure must teach or suggest all the claim limitations. As such, since none of the cited references expressly or impliedly teach or suggest the aforementioned features of independent claim 1, Applicant respectfully asserts that the Office Action relies on Applicant's disclosure, and not the cited references, in concluding that the invention as claimed would be obvious.

In addition to the aforementioned deficiencies, Applicant respectfully asserts that *Py* and *West* do not teach or suggest, "a water supply part located at the lower half of the horizontal jacket pipes for allowing water to enter from the holes at the lower half of the horizontal jacket pipes," as recited in independent claim 1, as amended.

With regard to the teachings of *Holden*, which has been cited as disclosing a dovetail connection, Applicant respectfully asserts that *Holden* does not overcome the aforementioned deficiencies in the teachings of *Py* and *West.*

Accordingly, Applicant respectfully asserts that any combination of *Py*, *West* and *Holden* would fail to teach or suggest an ex-vessel core melt retention device including, at least, "horizontal jacket pipes located on a shell boundary of a cavity floor of a reactor cavity, the horizontal jacket pipes having water inlets A formed at their lower half, the water inlets including a series of holes and allowing water to enter the bottom of the pipes ... vertical pipes connected at both ends of the horizontal jacket pipes in the form of a conventional dovetail joint to communicate with each other, the vertical pipes including open ends disposed within said reactor cavity to permit water vapor to escape therethrough and enable recirculation of said vapor within said reactor cavity ... a water supply part located at the lower half of the horizontal jacket pipes for allowing water to enter from the holes at the lower half of the horizontal jacket pipes," as recited in independent claim 1, as amended.

As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." "A claim is anticipated only if each and every element as set forth in the

claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. Of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Moreover, as pointed out in M.P.E.P. § 2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art". *In re Royka*, 409 F.2d 981, 180 USPQ 580 (CCPA 1974). Since these criteria have clearly not been met, Applicant respectfully asserts that the rejection under 35 U.S.C. § 103 (a) should be withdrawn because *Py*, *West* and *Holden* clearly do not teach or suggest each feature of independent claim 1.

In view of the above arguments, Applicant respectfully requests the rejection of independent claim 1 under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

In view of the foregoing, Applicant respectfully requests reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicant's undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 04-2223. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

DYKEMA GOSSETT PLLC

Dated: December 24, 2003 By:

Adesh Bhargava
Reg. No. 46,553

DYKEMA GOSSETT PLLC
1300 I Street, N.W., Suite 300 West
Washington, D.C. 20005
(202) 906-8696

FIG. 1

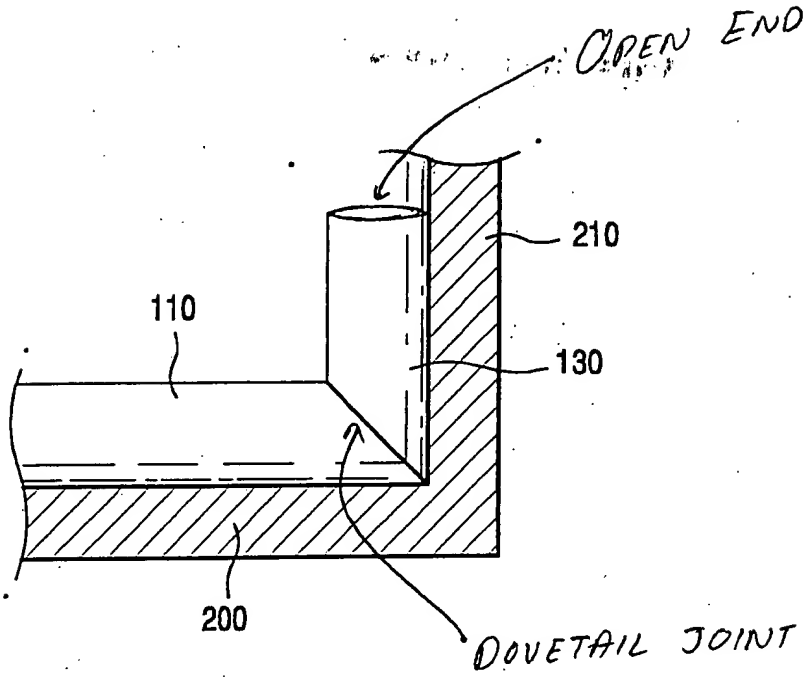

FIG. 2